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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,946	12/29/2000	Abel C. Dasylva	57983.000018	6810

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EXAMINER	
BELLO, AGUSTIN	

ART UNIT	PAPER NUMBER
2633	8

DATE MAILED: 02/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/749,946	DASYLVA ET AL.	
	Examiner	Art Unit	
	Agustin Bello	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-16 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-5 and 9-13 is/are rejected.

7)☒ Claim(s) 6-8 and 14-16 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 29 December 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 5.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr (U.S. Patent No. 6,532,090).

Regarding claims 1 and 9, Doerr teaches a method for interchanging wavelengths in a multiwavelength system having W wavelength channels, the method comprising the steps of: selectively directing a pair of adjacent frequency channels corresponding to a respective pair of adjacent wavelength channels based upon a routing algorithm (reference numeral 910 in Figure 9); interchanging the frequencies of the selectively directed pair of adjacent frequency channels (reference numeral 930 in Figure 9); and selectively shifting the interchanged frequencies of the selectively directed pair of adjacent frequency channels (reference numeral 206 in Figure 2 and column 4 lines 24-32, column 6 lines 20-24). Doerr differs from the claimed invention in that Doerr fails to specifically teach that shifting of interchanged frequencies is based upon a binary representation of each interchanged frequency. However, frequency shifting of frequencies based upon a binary representation of the frequency is, as noted by the applicant (page 13 lines 3-6), well known in the art and is accomplished via frequency mapping methods such as the butterfly permutation. Furthermore, frequency shift keying (FSK) is a well known digital method for assigning frequencies to specific binary representations, i.e. one frequency is

represented by "1" while another frequency is represented by "0" with frequencies being shifted according to binary representations. As such, one skilled in the art would clearly have recognized that it would have been possible to implement either a butterfly permutation or FSK in the device of Doerr (reference numeral 206 in Figure 2) in order to shift the frequencies according to their binary representations. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to shift the interchanged frequencies based upon a binary representation of each interchanged frequency.

Regarding claim 2, Doerr teaches the step of selectively directing the pair of adjacent frequency channels comprises the step of: selectively switching the pair of adjacent frequency channels to one of two output pairs (as seen in Figure 9 at the input of wavelength interchangers reference numeral 930).

Regarding claim 10, Doerr teaches that the switching element comprises: a cross-connect (reference numeral 204 in Figure 2) for selectively switching the pair of adjacent frequency channels to one of two output pairs.

3. Claims 3-5 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr in view of Lee (U.S. Patent No. 5,148,428).

Regarding claims 3, 5, 11, and 13, Doerr differs from the claimed invention in that Doerr fails to specifically teach routing the selectively directed pair of adjacent frequency channels based upon a binary representation of the frequency of each of the selectively directed pair of adjacent frequency channels. However, routing based upon a binary representation is well known in the art. Lee teaches a system wherein a switching element is capable of performing a binary routing algorithm based on an n-bit destination address. One skilled in the art would have

been motivated to rout the selectively directed pair of adjacent frequency channels based upon a binary representation of the frequency of each of the selectively directed pair of adjacent frequency channels in order to ensure that channels of a particular frequency reached their destination. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to rout the selectively directed pair of adjacent frequency channels based upon a binary representation of the frequency of each of the selectively directed pair of adjacent frequency channels.

Regarding claims 4 and 12, the combination of Doerr and Lee differs from the claimed invention in that it fails to specifically teach shifting the frequency of a first of the selectively directed pair of adjacent frequency channels by an amount defined by $+\Delta f$; and shifting the frequency of a second of the selectively directed pair of adjacent frequency channels by an amount defined by $-\Delta f$; wherein Δf is the frequency spacing between the pair of adjacent frequency channels. However, being that Doerr teaches frequency shifting in general, one skilled in the art would clearly have recognized that it would have been possible to shift the frequency of the channels by any amount desired including by $\pm\Delta f$. Furthermore, interchanging of frequency channels by shifting them by the frequency spacing is well known in the art. Moreover, Doerr, in teaching wavelength interchanging suggest that the frequencies of the channels are shifted in opposite directions. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to shift the frequency of a first of the selectively directed pair of adjacent frequency channels by an amount defined by $+\Delta f$; and shifting the frequency of a second of the selectively directed pair of adjacent frequency channels by an

amount defined by -Δf; wherein Δf is the frequency spacing between the pair of adjacent frequency channels.

Allowable Subject Matter

4. Claims 6-8 and 14-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB

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